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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,203	04/23/2001	Dagnachew Birru	US 010189	3946
24737	7590	10/13/2004	EXAMINER	
PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510			VARTANIAN, HARRY	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 10/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/840,203

**Applicant(s)**

BIRRU, DAGNACHEW

**Examiner**

Harry Vartanian

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 11-14 and 16-19 is/are rejected.
- 7) ☒ Claim(s) 5, 10, 15 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/01</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: Please change the docket number on page 1 of the co-pending application to the PTO application number.

Appropriate correction is required.

2. The disclosure is objected to because of the following informalities: On page 3 there is a typo on line 17. Please change to "On[[e]] the other other.."

Appropriate correction is required.

3. The disclosure is objected to because of the following informalities: On page 10, line 16 the channel decoder is mislabeled. It should be "decoder [[102]]**104**".

Appropriate correction is required.

### ***Drawings***

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 102. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required

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corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 209. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-3, 6-8, 11-13, and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Rosenlof et al (US Pat# 6,785,349). In regards to Claim 1, Rosenlof et al meets the following limitations:

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a frequency domain equalizer having forward and feedback paths **(Column 2, line 63 to Column 3, line 13); fig 4 for feedback paths**

and a decision feedback equalizer decision network within said feedback path of said frequency domain equalizer, said frequency domain equalizer and said decision feedback equalizer decision network both employing a single error vector to update error correction therein. **(Column 2, line 63 to Column 3, line 13)**

Moreover, regarding the limitation of using a single error vector above Rosenlof et al meets the limitation of the claim by using the error to improve both the frequency domain equalizer AND the slicer in his "decision feedback equalizer", (Column 3, lines 10-13).

Regarding Claim 2, Rosenlof et al meets the following limitations of the claim:

said decision feedback equalizer decision network further comprises a decision device within said feedback path for said frequency domain equalizer. **(Column 3, lines 7-10)**

Regarding Claim 3, the use of trellis decoding is admitted as prior art on page 3, line 17 to page 4, line 3.

Regarding Claim 6, Rosenlof et al meets the limitations of the claim in the rejection for claim 1 above. Moreover, the limitation "an input receiving single carrier digital signals" is also met by Rosenlof et al since the scope of a multi-carrier receiver includes the ability to process and receive single carrier signals.

Regarding Claim 7, Rosenlof et al meets the limitations of the claim in the rejection for claim 2 above.

Regarding Claim 8, the use of trellis decoding is admitted as prior art on page 3, line 17 to page 4, line 3.

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Regarding Claim 11, Rosenlof et al meets the limitations of the claim in the rejection for claim 6 above.

Regarding Claim 12, Rosenlof et al meets the limitations of the claim in the rejection for claim 2 above.

Regarding Claim 13, the use of trellis decoding is admitted as prior art on page 3, line 17 to page 4, line 3.

Regarding Claim 16, Rosenlof et al meets the limitations of the claim in the rejection for claim 1 above.

Regarding Claim 17, Rosenlof et al meets the limitations of the claim in the rejection for claim 2 above.

Regarding Claim 18, the use of trellis decoding is admitted as prior art on page 3, line 17 to page 4, line 3.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 4, 9, 14, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenlof et al (US Pat# 6,785,349) in view of Kapoor et al (EPO 1043875 A2). Rosenlof et al meets all the limitations of Claims 4, 9, 14, and 19 except disclosing the use of a time domain feedback filter within the feedback loop.

However, Kapoor et al's DMT receiver shows the use of a FEQ and time domain equalizer (TEQ) in the same feedback loop in fig 1. Therefore it would have been prima facie obvious to use a FEQ and TEQ in the same feedback loop. A motivation to combine is disclosed by Van Acker et al (United States Patent 6,744,821), wherein he states that:

"It is the task of the time domain equaliser **TEQ to shorten the impulse response length of the channel so that it does not exceed the length of the cyclic extension CE...** If a multicarrier symbol MS has passed the equalised channel (transmission channel+time domain equaliser TEQ), the samples thereof are serial to parallel converted by the serial to parallel converter S/P and the cyclic prefix extractor CE EXTRACT subtracts the cyclic extension CE from the multicarrier symbol MS so that a non-extended multicarrier symbol is applied to the fast Fourier transformer FFT for time to frequency domain conversion. **The frequency domain multicarrier symbol at the output of the fast Fourier transformer FFT is supplied to the frequency domain equaliser FEQ which typically contains one complex tap per carrier to compensate for each carrier the phase rotation and attenuation due to transmission over the channel.** For the so obtained carriers the demapper DMAP decodes the exact amount of bits from each carrier using the appropriate constellation schemes and the bits at the output of the demapper DMAP are serialised by the parallel to serial converter P/S." (Column 4, Line 54 to Column 5, Line 8)

#### ***Allowable Subject Matter***

8. Claims 5, 10, 15, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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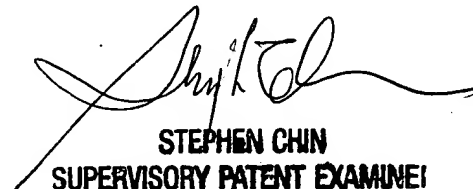
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry Vartanian whose telephone number is 571.272.3048. The examiner can normally be reached on 10:00-6:30 Mondays to Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571.272.3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Harry Vartanian  
Examiner  
Art Unit 2634

HV



**STEPHEN CHIN**  
**SUPERVISORY PATENT EXAMINER**  
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